

CLAIMS

We claim:

- 1 1. A wing for a micro air vehicle, comprising:
 - 2 at least one layer of a resilient material having a camber forming a concave surface
 - 3 facing downward;
 - 4 wherein the wing is bendable from a steady state position in a first direction such that
 - 5 tips of the wing may be bent toward the concave surface but not substantially in a second
 - 6 direction that is generally opposite to the first direction; and
 - 7 wherein the wing is capable of returning to the steady state position by releasing the
 - 8 tips of the wing.
- 1 2. The wing for a micro air vehicle of claim 1, wherein the at least one layer of a
- 2 resilient material comprises a leading edge formed from a first material that is different from
- 3 the material forming a remainder of the at least one layer.
- 1 3. The wing for a micro air vehicle of claim 2, wherein the leading edge is
- 2 formed from an aramid fiber/epoxy mixture and at least a portion of the remainder of the at
- 3 least one layer is formed from a mixture of carbon fiber and epoxy.
- 1 4. The wing for a micro air vehicle of claim 1, wherein the at least one layer of a
- 2 resilient material is formed from pre-impregnated carbon/epoxy fiber cloth.

1 5. The wing for a micro air vehicle of claim 1, wherein the at least one layer of a
2 resilient material is formed from an aramid fiber/epoxy mixture.

1 6. The wing for a micro air vehicle of claim 1, wherein the at least one layer of a
2 resilient material is formed from materials selected from the group consisting of fiber
3 reinforced laminates, sheet metal, foam materials, and plastics.

1 7. The wing for a micro air vehicle of claim 6, wherein the fiber reinforced
2 laminates are selected from the group consisting of carbon fiber reinforced polymers, glass
3 reinforced polymers, and aramid reinforced polymers.

1 8. The wing for a micro air vehicle of claim 6, wherein the sheet metal is selected
2 from the group consisting of spring steel, aluminum, stainless steel, and titanium.

1 9. The wing for a micro air vehicle of claim 1, wherein a wing span of the wing
2 is between about three inches and about twenty four inches.

1 10. The wing for a micro air vehicle of claim 1, wherein the wing is capable of
2 being bent around a central body of a micro air vehicle so that the micro air vehicle including
3 the wing may fit within a tube having a diameter of about three inches.

1 11. The wing for a micro air vehicle of claim 1, further comprising a riser section
2 forming a concave portion on an upper surface of the wing proximate to a trailing edge of the
3 wing.

1 12. A micro air vehicle, comprising:
2 a central body;
3 a wing attached to the central body, wherein the wing comprises:
4 at least one layer of a resilient material having a camber forming a concave
5 surface facing downward;
6 wherein the wing is bendable from a steady state position in a first direction
7 such that tips of the wing may be bent toward the concave surface but not
8 substantially in a second direction that is generally opposite to the first direction; and
9 wherein the wing is capable of returning to the steady state position by
10 releasing the tips of the wing.

1 13. The micro air vehicle of claim 12, wherein the at least one layer of a resilient
2 material comprises a leading edge formed from a first material that is different from the
3 material forming a remainder of the at least one layer.

1 14. The micro air vehicle of claim 13, wherein the leading edge is formed from an
2 aramid fiber/epoxy mixture and at least a portion of the remainder of the at least one layer is
3 formed from a mixture of carbon fiber and epoxy.

1 15. The micro air vehicle of claim 12, wherein the at least one layer of a resilient

2 material is formed from pre-impregnated carbon/epoxy fiber cloth.

1 16. The micro air vehicle of claim 12, wherein the at least one layer of a resilient

2 material is formed from an aramid fiber/epoxy mixture.

1 17. The micro air vehicle of claim 12, wherein the at least one layer of a resilient

2 material is formed from materials selected from the group consisting of fiber reinforced

3 laminates, sheet metal, foam materials, and plastics.

1 18. The micro air vehicle of claim 17, wherein the fiber reinforced laminates are

2 selected from the group consisting of carbon fiber reinforced polymers, glass reinforced

3 polymers, and aramid reinforced polymers.

1 19. The micro air vehicle of claim 17, wherein the sheet metal is selected from the

2 group consisting of spring steel, aluminum, stainless steel, and titanium.

1 20. The micro air vehicle of claim 12, wherein a wing span of the wing is between

2 about three inches and about twenty four inches.

1 21. The micro air vehicle of claim 12, wherein the wing is capable of being bent

2 around a central body of a micro air vehicle so that the micro air vehicle including the wing

3 may fit within a tube having a diameter of about three inches.

1 22. The micro air vehicle of claim 12, further comprising a riser section forming a
2 concave portion on an upper surface of the wing proximate to a trailing edge of the wing.

1 23. The micro air vehicle of claim 12, further comprising a tail coupled to the
2 central body that is generally orthogonal to the wing.

1 24. The micro air vehicle of claim 12, further comprising a tail coupled to the
2 central body that is generally vertical to the wing.

1 25. A wing for a micro air vehicle, comprising:
2 a support structure forming an outline of the wing including a leading edge, a trailing
3 edge, and wing tips;
4 at least one layer of a material attached to the support structure forming a surface of
5 the wing and having a camber forming a concave surface facing downward;
6 wherein the wing is bendable from a steady state position in a first direction such that
7 tips of the wing may be bent toward the concave surface but not substantially in a second
8 direction that is generally opposite to the first direction; and
9 wherein the wing is capable of returning to the steady state position by releasing the
10 tips of the wing.

1 26. A wing for a micro air vehicle of claim 25, wherein the support structure is
2 formed from a plurality of ribs.

1 27. A wing for a micro air vehicle of claim 26, wherein the plurality of ribs are
2 formed from carbon fiber strands.

1 28. A wing for a micro air vehicle of claim 25, wherein the at least one material is
2 comprised of latex.

1 29. The wing for a micro air vehicle of claim 25, wherein a wing span of the wing
2 is between about three inches and about twenty four inches.

1 30. The wing for a micro air vehicle of claim 25, wherein the wing is capable of
2 being bent around a central body of a micro air vehicle so that the micro air vehicle including
3 the wing may fit within a tube having a diameter of about three inches.

1 31. The wing for a micro air vehicle of claim 25, further comprising a riser section
2 forming a concave portion on an upper surface of the wing proximate to the trailing edge of
3 the wing.